

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-46. (cancelled)

47. (currently amended) A method for secure in-band management of a network device that provides routing and forwarding services, the method comprising:

- configuring a virtual private network (VPN) for the network device;
- linking the VPN to a source of non-VPN management commands;
- using the VPN to carry the non-VPN management command~~traffic~~ from the source of the non-VPN management commands to the network device; and
- using the network device to forward the non-VPN management command~~traffic~~ to a management port of the network device through a VPN module.

48. (previously presented) The method of claim 47 wherein the network device includes a routing and forwarding module and a management VPN module coupled to the routing and forwarding module.

49. (previously presented) The method of claim 47 wherein the network device is one of a network switch, a network bridge, a network hub, and a network gateway.

50. (previously presented) The method of claim 47 wherein the network device can perform one of Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous Transfer Mode (ATM) services.

51. (currently amended) The method of claim 47 wherein the source of the non-VPN management commands is one of a non-VPN management device and a non-VPN management function.

52. (currently amended) A network device that provides routing and forwarding services for a data network, the network device comprising:

a routing and forwarding module to forward data received from the data network on an input data link to an output data link in accordance with source and destination information contained in the data;

a router configuration module to perform non-VPN management operations for the network device;

a management port coupled to the router configuration module to receive the non-VPN management commands for the router configuration module; and

a management VPN module coupled to the routing and forwarding module and to the management port, the management VPN module to provide non-VPN management commands to the management port from a virtual private network (VPN) ~~that uses a tunneling protocol on the data network to deliver, wherein the non-VPN~~ management commands are delivered to the routing and forwarding module.

53. (previously presented) The network device of claim 52 wherein the network device is one of a network switch, a network bridge, a network hub, and a network gateway.

54. (previously presented):

The network device of claim 52 wherein the network device can perform one of Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous Transfer Mode (ATM) services.

55. (currently amended):

The network device of claim 52 wherein the source of the non-VPN management commands is one of a non-VPN management device and a non-VPN management function.

56. (currently amended):

A network device that provides routing and forwarding services, the network device comprising:

means for configuring a virtual private network (VPN) for the network device;
means for linking the VPN to a source of non-VPN management commands;
means for using the VPN to carry the non-VPN management ~~command~~traffic
from the source of the non-VPN management commands to the network device; and
means for using the network device to forward the non-VPN management ~~command~~traffic to a management port of the network device through a VPN module.

57. (currently amended):

The network device of claim 56 wherein the means for using the network device to forward the non-VPN management ~~command~~traffic to a management port of the network device through a VPN module includes a routing and forwarding module and a management VPN module coupled to the routing and forwarding module.

58. (previously presented):

The network device of claim 56 wherein the network device is one of a network switch, a network bridge, a network hub, and a network gateway.

59. (previously presented):

The network device of claim 56 wherein the network device can perform one of Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous Transfer Mode (ATM) services.

60. (currently amended):

The network device of claim 56 wherein the source of the non-VPN management commands is one of a non-VPN management device and a non-VPN management function.

61. (currently amended):

A machine-readable medium providing instructions, which if executed by a processor, cause the processor to perform an operation comprising:

configuring a virtual private network (VPN) for a network device;
linking the VPN to a source of non-VPN management commands;
using the VPN to carry the non-VPN management command~~traffic~~ from the
source of the non-VPN management commands to the network device; and
using the network device to forward the non-VPN management
command~~traffic~~ to a management port of the network device through a VPN module.

62. (previously presented):

The machine-readable medium of claim 61 wherein the network device includes a
routing and forwarding module and a management VPN module coupled to the
routing and forwarding module.

63. (previously presented):

The machine-readable medium of claim 61 wherein the network device is one of a
network switch, a network bridge, a network hub, and a network gateway.

64. (previously presented):

The machine-readable medium of claim 61, further providing instructions, which if
executed by the processor, further cause the processor to perform an operation
comprising one of performing Internet Protocol (IP) services, performing
Multiprotocol Label Switching (MPLS) services, and performing Asynchronous
Transfer Mode (ATM) services.

65. (currently amended):

The machine-readable medium of claim 61 wherein the source of the non-VPN management commands is one of a non-VPN management device and a non-VPN management function.

66. (currently amended):

A data network comprising:

a plurality of network devices that provide routing and forwarding services for the data network; and

a source of non-VPN management commands transmitted to the plurality of network devices using a virtual private network (VPN) ~~that uses a tunneling protocol on the data network;~~ wherein each of the plurality of network devices includes:

a routing and forwarding module to forward data received from the data network on an input data link to an output data link in accordance with source and destination information contained in the data;

a router configuration module to perform non-VPN management operations for the network device;

a management port coupled to the router configuration module to receive non-VPN management commands for the router configuration module; and

a management VPN module coupled to the routing and forwarding module and to the management port, the management VPN module to provide

non-VPN management commands to the management port from the source of
the non-VPN management commands.

67. (previously presented):

The data network of claim 66 wherein each of the plurality of network devices is one of a network switch, a network bridge, a network hub, and a network gateway.

68. (previously presented):

The data network of claim 66 wherein the plurality of network devices can perform one of Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous Transfer Mode (ATM) services.

69. (currently amended):

The data network of claim 66 wherein the source of the non-VPN management commands is one of a non-VPN management device and a non-VPN management function.